MEMO.

CORRECTION OF CLERICAL ERRORS.

SPECIFICATION, No. 6199, A.D. 1898.

The following correction is in accordance with the decision of the Comptroller-General of the 12th day of April, 1899—

Page 1. In the Communication in the Provisional and Complete Specifications *after* "Stillman Williams Robinson" *read:* formerly of the Ohio State University, Columbus, and *for* "Neal Avenue" *read* Neil Avenue; also on page 4, end of line 10, *for* "said barrel having" *read* said plunger having.

Correction of Printers' Errors.

Page 2, line 19, *for* "placed" *read* spaced.
Page 4, line 10, *for* "throuhout" *read* throughout.

Patent Office,
20*th April*, 1899.

17198—150—4/99 G 4630 D & S—2 (B)

Nº 6199 A.D. 1898

Date of Application, 14th Mar., 1898
Complete Specification Left, 10th Oct., 1898—Accepted, 17th Dec., 1898

PROVISIONAL SPECIFICATION.

Improvements in Syringes for Surgical and like uses.

A communication from abroad by STILLMAN WILLIAMS ROBINSON, of University of Ohio, Columbus, State of Ohio, one of the United States of America, Professor, and HENRY JOHNSON DETMERS, of 1315, Neal Avenue, Columbus aforesaid, Doctor of Medicine.

I, ALFRED GEORGE BROOKES, of 55/56, Chancery Lane, in the County of London, Chartered Patent Agent, do hereby declare the nature of this invention to be as follows:—

This invention relates to improvements in hypodermic syringes, being especially intended for making delicate injections, such as intravenous injections, and those in connection with infectious diseases where it is absolutely necessary that the instrument should be absolutely sterilized, and without any liability of working improperly, particularly in respect to its certainty not to draw air bubbles.

The syringe constituting the invention is constructed of three parts, a needle head, a cylinder or body, and a plunger, each of which is entirely without foreign matter, such as packing which would not only be liable to deteriorate, but would absorb bacteria, and could not be readily and satisfactorily sterilized; each part also is without crevices or pockets which might afford lodgment to microbes, *etcetera*; and, above all, the parts are so constructed and fitted to each other that they automatically seal themselves, or in other words are self packing, without the employment of packing *per se*

In carrying out this last mentioned feature of the invention, I provide the barrel with a bore of uniform diameter throughout its operative area, this barrel being also entirely open from end to end, and perfectly smooth on its inner surface, so that it may be readily inspected.

Preferably the three parts mentioned are all made of metal, in order that they will expand and contract the same, and in order that they may be quickly and completely sterilized by simple means, such for instance, as dropping in boiling water.

The plunger is ground throughout its entire length to fit this bore with absolute accuracy.

Besides this, the plunger is provided with a series of small hair-like peripheral grooves, which serve the double purpose of graduations to determine the quantity of liquid drawn into or expelled from the barrel, and at the same time by reason of the elasticity of the minute filaments of air contained therein, or, more properly, held thereby as an inappreciable film between the barrel and plunger, form an absolute barrier to the passage of any fluid along between the barrel and plunger, thus to assist in the perfect action of the plunger, and produce the vacuum necessary to draw into the barrel the liquid to be used, and also to prevent leakage of the same around the plunger as it is expelled, and effectually prevent the drawing in of any bubbles.

[*Price 8d.*]

The impossibility of the instrument drawing any bubbles is of great importance, inasmuch as the liability to draw in bubbles has been heretofore common in this class of instruments, and, as will be understood by those skilled in the profession, the presence of a bubble is often very serious and may even endanger a patient's life.

The needle head is also bored out and countersunk, and the needle is preferably extended entirely through the head and secured by shrinking, brazing, swaging, or other suitable means, leaving the two substantially integral and without empty spaces to contain air or micro-organisms.

The holding collar on the barrel and the handle on the plunger are also formed integral or practically so with the main body of their respective parts, so that the entire syringe is rendered microbe proof and reduced to the least possible number; and the constructions, particularly the long bearing surface and peripheral grooves of the plunger, fitting as it does within the barrel for its entire length, are such that the instrument can never draw air bubbles, there are no places not open to inspection, or which can escape disinfection, the entire instrument is permanently durable, not deteriorating with disuse, and it works equally well under all temperatures and conditions.

The rings or grooves on the plunger may if desired be placed apart according to any system of graduations.

Dated the 14th day of March 1898.

WM. BROOKES & SON,
55 and 56, Chancery Lane, London, Agents for the Applicant.

COMPLETE SPECIFICATION.

Improvements in Syringes for Surgical and like uses.

A communication from abroad by Stillman Williams Robinson, of University of Ohio, Columbus, State of Ohio, one of the United States of America, Professor, and Henry Johnson Detmers, of 1315, Neal Avenue, Columbus aforesaid, Doctor of Medicine.

I, Alfred George Brookes, of 55/56, Chancery Lane, in the County of London, Chartered Patent Agent, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in hypodermic syringes, being especially intended for making delicate injections, such as intravenous injections, and those in connection with infectious diseases where it is absolutely necessary that the instrument should be absolutely sterilized, and without any liability of working improperly, particularly in respect to its certainty not to draw air bubbles.

The syringe constituting the invention is constructed of three parts, a needle head, a cylinder or body, and a plunger, each of which is entirely without foreign matter, such as packing which would not only be liable to deteriorate, but would absorb bacteria, and could not be readily and satisfactorily sterilized; each part also is without crevices or pockets which might afford lodgement to microbes, *etcetera*; and, above all, the parts are so constructed and fitted to each other that they automatically seal themselves, or in other words are self packing, without the employment of packing *per se*.

In carrying out this last mentioned feature of the invention, I provide the barrel with a bore of uniform diameter throughout its operative area, this barrel being also entirely open from end to end, and perfectly smooth on its inner surface, so that it may be readily inspected.

Preferably the three parts mentioned are all made of metal, in order that they will expand and contract the same, and in order that they may be quickly and completely sterilized by simple means, such for instance, as dropping in boiling water.

The plunger is ground throughout its entire length to fit this bore with absolute accuracy.

Besides this, the plunger is provided with a series of small hair-like peripheral grooves, which serve the double purpose of graduations to determine the quantity of liquid drawn into or expelled from the barrel, and at the same time by reason of the elasticity of the minute filaments of air contained therein, or, more properly, held thereby as an inappreciable film between the barrel and plunger, form an absolute barrier to the passage of any fluid along between the barrel and plunger, thus to assist in the perfect action of the plunger, and produce the vacuum necessary to draw into the barrel the liquid to be used, and also to prevent leakage of the same around the plunger as it is expelled, and effectually prevent the drawing in of any bubbles.

The impossibility of the instrument drawing any bubbles is of great importance, inasmuch as the liability to draw in bubbles has been heretofore common in this class of instruments, and, as will be understood by those skilled in the profession, the presence of a bubble is often very serious and may even endanger a patient's life.

The needle head is also bored out and countersunk, and the needle is preferably extended entirely through the head and secured by shrinking, brazing, swaging, or other suitable means, leaving the two substantially integral and without empty spaces to contain air or micro-organisms.

The holding collar on the barrel and the handle on the plunger are also formed integral or practically so with the main body of their respective parts, so that the entire syringe is rendered microbe proof and its component parts are reduced to the least possible number; and the constructions, particularly the long bearing surface and peripheral grooves of the plunger, fitting as it does within the barrel for its entire length, are such that the instrument can never draw air bubbles, there are no places not open to inspection, or which can escape disinfection, the entire instrument is permanently durable, not deteriorating with disuse, and it works equally well under all temperatures and conditions.

The rings or grooves on the plunger may if desired be spaced apart according to any system of graduations.

In the accompanying drawings I have illustrated the details of construction of this invention.

In these drawings Fig. 1 shows this new hypodermic syringe in side elevation;

Fig. 2 shows the parts thereof separated, the barrel being represented in vertical longitudinal section and the plunger and needle head in side elevation, a portion of the handle of the plunger being broken away;

Fig. 3 is a vertical longitudinal section of the head on an enlarged scale.

The barrel *a* has a uniform cylindrical diameter a^2 open from end to end, the forward end thereof being slightly conical at a^3 to receive a correspondingly tapering or conical end b^1 of the needle head b and the rear end of the barrel having a holding collar a^1.

The needle head is bored out to receive the needle b^2, which is shown as slightly countersunk therein at b^3.

The plunger c is ground with great accuracy to precisely the same diameter throughout its entire length, and is shown as provided with a plurality of hair like transverse grooves c^2 which act in the double capacity of air passages and a graduated scale.

At its rear end the plunger has a handle c^1 shown as slightly concaved to receive the thumb.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A hypodermic syringe having a barrel provided with a smooth open bore of the same diameter from end to end, a needle head for one end thereof, and a plunger ground to fit said barrel throughout its length, substantially as and for the purpose set forth.

2. A hypodermic syringe having a barrel provided with a smooth open bore of the same diameter from end to end, a needle head for one end thereof, and a plunger ground to fit said barrel throuhout its length, said barrel having a plurality of transverse hair-like grooves formed in its periphery.

3. The herein described hypodermic syringe having a barrel, plunger and needle head all made of the same material to expand and contract simultaneously and indestructible in boiling water, the plunger contacting with the barrel at every point throughout its length, and said parts being constructed without packing and without crevices or pockets for the lodgment of microbes, *etcetera.*

Dated the 10th day of October 1898.

WM. BROOKES & SON,
55 and 56, Chancery Lane, London, Agents for the Applicant.

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A.D. 1898. March 14. No. 6199.

BROOKES' Complete Specification.

(1 SHEET)

Fig: 1.

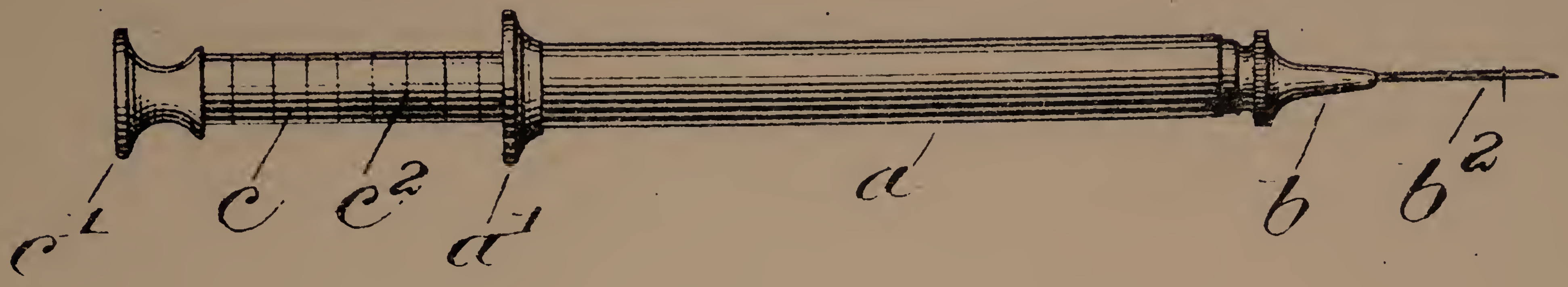


Fig: 2.

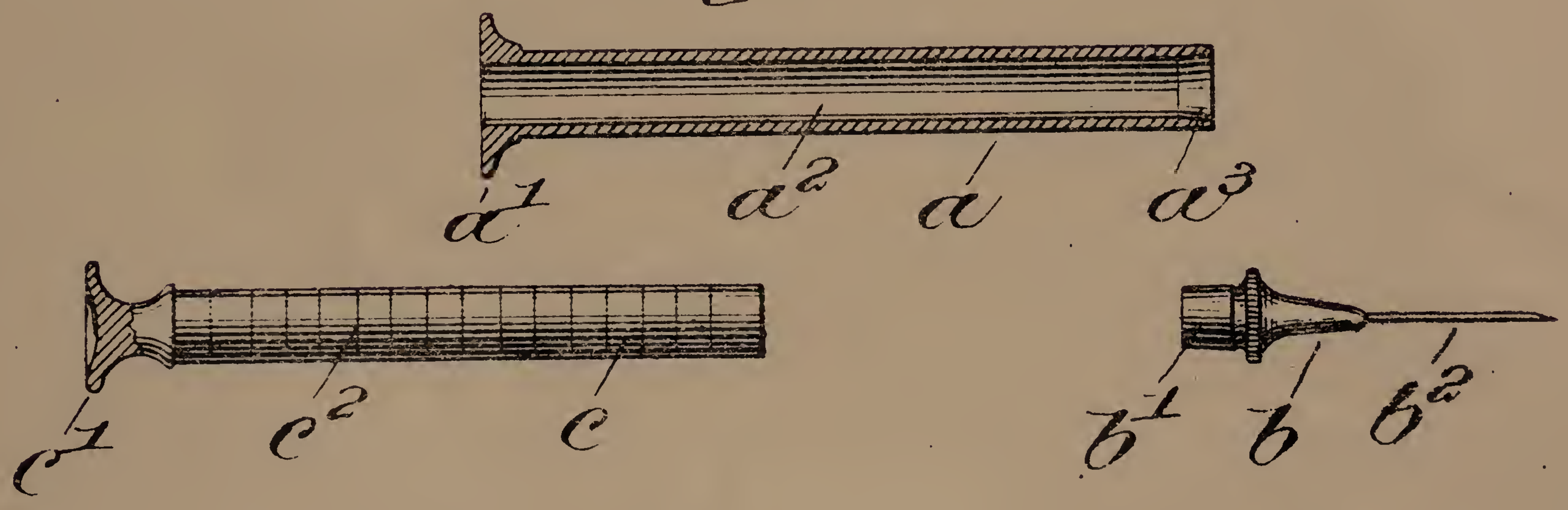
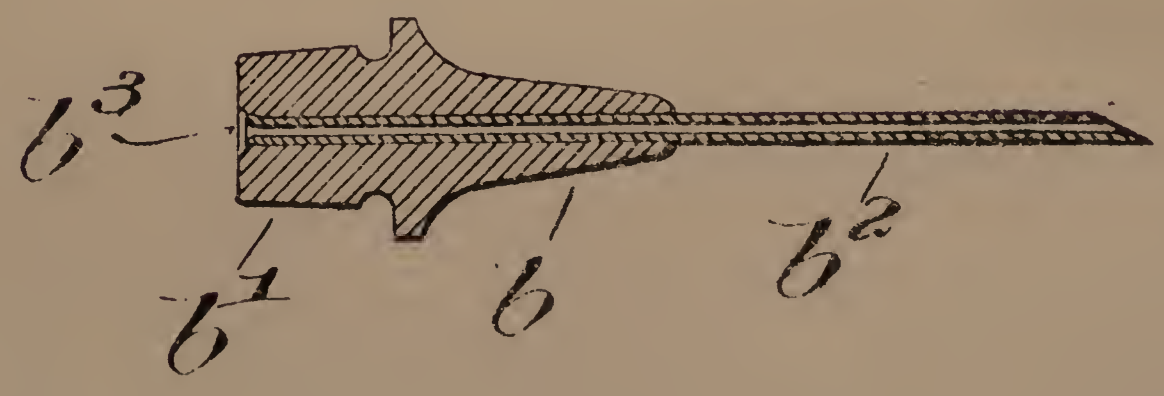


Fig: 3.



[This Drawing is a reproduction of the Original on a reduced scale.]

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